

REMARKSI. Introduction

In response to the Office Action dated August 13, 2003, claims 14-26 have been cancelled and claims 1-3, 8, 9, 27-29, 34 and 35 have been amended. Claims 1-13 and 27-41 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Interview Summary Record

Record is made of a telephone interview between Applicants' attorney George Gates and Examiner Zahn that occurred on December 9, 2003. During the interview, the rejections under 35 U.S.C. §112, second paragraph, were discussed, but no agreement was reached.

Record is also made of a telephone interview between Applicants' attorney Bradley Lortz and Examiner Zahn that occurred on November 12, 2003. During the interview, the proposed amendments were discussed, but no agreement was reached.

III. Claim Amendments

Applicants' attorney has made amendments to the claims as indicated above. These amendments were made solely for the purpose of clarifying the language of the claims, and were not required for patentability or to distinguish the claims over the prior art.

IV. Non-Art Rejections

On page (2) of the Office Action, claims 1-13 and 27-41 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

In response, Applicants' attorney has amended claims 1-3, 8, 9, 27-29, 34 and 35 as indicated above to overcome these rejections.

Applicants' attorney notes that amendments have been twice previously made in an effort to overcome the §112, second paragraph, rejections. Subsequent Office Actions have only repeated the same §112 rejections and, in the present Office Action, new grounds have even been added. In these official actions from the Patent Office, no suggestions have been provided on how to improve the clarity or precision of the language used. In an effort to further the prosecution of the instant application, Applicants' attorney refers to MPEP §706, a portion of which is reproduced below.

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When an application discloses patentable subject matter and it is apparent from the claims and the applicant's arguments that the claims are intended to be directed to such patentable subject matter, but the claims in their present form cannot be allowed because of defects in form or omission of a limitation, the examiner should not stop with a bare objection or rejection of the claims. The examiner's action should be constructive in nature and when possible should offer a definite suggestion for correction. MPEP §706.

In addition to providing no guidance according to MPEP §706, Applicants' attorney respectfully submits that the present scrutiny exceeds the parameters defined by the MPEP §2173.02 in view of §112, second paragraph. See, e.g. MPEP §2173.02, a portion of which is reproduced below.

The examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement.

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. MPEP §2173.02

In this context, the courts repeatedly note that the standard for review is from the viewpoint of one of ordinary skill in the art. In particular, courts note that a rejection of the claim under 35 U.S.C. 112, second paragraph is appropriate only if the language of a claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement. See, e.g. Morton Int'l, Inc. v. Cardinal Chem. Co., 5 F.3d 1464, 1470, 28 USPQ2d 1190, 1195 (Fed. Cir. 1993) and MPEP §2173.02. Applicants' attorney respectfully submits that in view of the disclosure content and the teachings of prior art (as in e.g. Coldren U.S.

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4,896,325, the cited reference) the instant claims satisfy the legal requirements for clarity and precision.

As the claims as currently amended define the patentable subject matter with a reasonable degree of particularity and distinctness, they therefore meet the requirements of MPEP §706 and §2173.02. (In addition, because the examiner has not identified a way in which to improve the clarity or precision of the language used, Applicants' attorney respectfully requests withdrawal of the present §112 rejections.)

V. Prior Art Rejections

On page (3) of the Office Action, claims 1-3, 9, 10, 13, and 27-29, 35, 36, 39-41 were rejected under 35 U.S.C. §102(b) as being anticipated by Coldren, U.S. Patent No. 4,896,325 (Coldren).

On page (4) the Office Action indicates that Applicants arguments with respect to claims 1-13 and 27 have been considered but are moot in view of the new grounds of rejection. However, Applicants' attorney notes that no new grounds of rejection are presented; as with the prior amendment, the Office Action merely recites the claims as amended in rejecting them again over Coldren. Particularly, Applicants' attorney notes that the grounds for rejection are identical as they relate to arguments that Coldren does not teach a waveguide including an SCH and additional gain for the light beam provided by at least one of the phase section, the front mirror and the back mirror in order to partially compensate for losses associated with tuning. (In addition, Applicants' attorney notes that Arguments were presented for claims 28-41 as well by identifying their dependence from independent claim 27.)

As previously indicated in the Amendment under 37 CFR §1.116 submitted May 27, 2003, Applicants' attorney again notes that the Office Action includes no detailed rejection of claims 4-8, 11, 12, 30-34, 37 and 38 in view of prior art. Accordingly, Applicants' attorney believes the Office Action indicates that these claims are allowable if amended to overcome the §112 rejection. Nonetheless, the following arguments with respect to the §102 rejection apply to all the outstanding claims.

Independent claims 1 and 27 are generally directed to a tunable laser and an article of manufacture comprising a waveguide for guiding a light beam, the waveguide including a separate-confinement-heterostructure (SCH) having an energy bandgap that is sufficiently low to provide gain to the light beam, a front mirror defining an end of a cavity within the waveguide and a back

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mirror defining an opposite end of the cavity within the waveguide. The cavity within the waveguide includes a gain section within the cavity for providing spontaneous emission of the light beam and for providing gain for the light beam and a phase section within the cavity for tuning the light beam around a center frequency of a bandwidth. Reflectivities of the front mirror, and the back mirror and the center frequency of the phase section are tuned to be substantially coincident such that the light beam exits the cavity and wherein additional gain for the light beam is provided by at least one of the phase section, the front mirror and the back mirror in order to partially compensate for losses associated with tuning.

However, the cited reference, Coldren, does not teach or suggest these various elements of Applicants' independent claims. Particularly, Coldren does not teach or suggest a tunable laser with a waveguide for guiding a light beam including a separate-confinement-heterostructure (SCH) having an energy bandgap that is sufficiently low to provide gain to the light beam. In addition, Coldren does not teach or suggest additional gain for the light beam is provided by at least one of the phase section, the front mirror and the back mirror in order to partially compensate for losses associated with tuning.

Coldren describes an improvement for allowing selective tuning of the emitted beam over a broad bandwidth to a diode laser having an active section for creating a light beam by spontaneous emission over a bandwidth around some center frequency and for guiding and reflecting the light beam between a pair of mirrors bounding the active on respective ends thereof to create an emitted beam of laser light. The mirrors each have narrow, spaced reflective maxima with the spacing of the reflective maxima of respective ones of the mirrors being different whereby only one the reflective maxima of each of the mirrors can be in correspondence and thereby provide a low loss window at any time. The preferred mirrors each include a plurality of discontinuities to cause the narrow, spaced reflective maxima wherein the spacing of the discontinuities of one mirror is different from the spacing of the discontinuities of the other mirror so as to cause the wavelength spacing of the maxima to be different.

The Office Action asserts that a waveguide including an SCH as claimed is taught by Coldren at col. 6, line 37 to col. 7, line 64. However, Coldren only teaches operation of the mirrors bounding the laser. Nowhere does Coldren mention an SCH used in the waveguide or anywhere else. Moreover, Coldren provides no discussion of a waveguide that provides gain to a light beam anywhere in the specification; the waveguide of Coldren is passive, teaching away from a waveguide including an SCH to provide gain.

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The Office Action also makes no assertion that Coldren teaches a phase and/or mirror section that provides additional gain to compensate for tuning losses as required by the present claims. The Office Action only notes that this element of the claims is given no patentable weight for the reasons discussed regarding §112, second paragraph. However, the only §112 rejection that Applicants can identify to this element is that an improper Markush form is used. Applicants' attorney submits that the outstanding §112 rejections, such as an improper Markush, should not prevent an evaluation of a claim limitation in view of the art. See III. Non-Art Rejections, above.

In view of the foregoing, Applicants' attorney respectfully submits that the present §102 rejection is overcome because each and every element of the claimed invention is not taught in the cited reference. Nowhere does Coldren teach or suggest an SGDBR laser comprising a waveguide including a separate-confinement-heterostructure (SCH) or additional gain for a light beam provided by at least one of the phase section, the front mirror and the back mirror in order to partially compensate for losses associated with tuning.

Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Coldren. For example, the present invention provides gain in a configuration that has higher saturation power than is found in quantum-well active regions operating in the typical wavelength ranges. In addition, Applicants' invention solves problems not recognized by Coldren. For instance, the present invention recognizes a way to provide gain in an SGDBR mirror and/or phase shift sections to offset the loss that normally accompanies tuning by carrier injection. See page 8, line 25 to page 9, line 2 of the application as filed.

Thus, Applicants' attorney submits that independent claims 1 and 27 are allowable over Coldren. Further, dependent claims 2-13 and 28-41 are submitted to be allowable over Coldren in the same manner, because they are dependent on independent claims 1, and 27, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-13 and 28-41 recite additional novel elements not shown by Coldren.

VI. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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